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ABSTRACT

This paper is a hypothetical dialogue between two influential psychologists, Jean Piaget and B. F. Skinner, on the concept of free will. The purpose of the dialogue is to critique Skinner's "Beyond Freedom and Dignity." While actual quotes are incorporated into the text from the work of both psychologists, the overall organization of the statements as well as most of the wording is the author's. The paper contends that neither Skinner's philosophy of science nor his theory of man is tenable, although each offers interesting insights from a limited perspective. Piaget's work provides an understanding of science as a growing organization and reorganization of knowledge which occasionally induces qualitative shifts in people's domain of perception. Piaget's image of man is one of a developing, integrating, and acting organism in dynamic exchange with its environment. The paper concludes by comparing the position of Piaget and Skinner with Douglas McGregor's conceptualization of Theory X and Theory Y. (CS)

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. . , . . , SPEAK NO FREEWILL

(PIAGET VS. SKINNER)

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University of Michigan, Ann Arbor, Michigan 48104, February 1974

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Skinner's Argument[1]

In Beyond Freedom and Dignity I argue that there are terrifying problems in the world (pollution, poverty, disease, famine, over population, and threats of nuclear holocaust) and we need to develop a technology of human behavior to solve these problems. A science of human behavior is developing which could provide such a technology, but its progress is impeded by a philosophy which considers man as having free will. Conclusion: If we want to solve the world's problems, we must advance the science of behavior and reject the prescientific view of man which is promoted in the literature on freedom[2].

Traditional philosophy is the major obstacle to the needed advancement of science and its concomitant benefits. Presented below are the essentials of this prescientific position; following is a brief outline of the scientific philosophy which should replace it.

The function of the prescientific philosophy is to provide an explanation of behavior which does not have to explained in turn. Explanation stops when a reason is given in terms of an autonomous inner man, a personality (superego, ego, id), a feeling, a purpose, an attitude and so on. Back in

the time of the Greeks, physics and biology also used "inner state" explanations, and only advanced as these were discarded. If psychology is to progress, it too must be placed on a firm natural science basis, by discarding inner state explanations.

Now the task of a scientific analysis of human behavior is to explain how the behavior of a person as a physical system is related to the conditions under which the human species evolved and the conditions under which the individual lives. An experimental analysis shifts the determination of behavior from autonomous man to the environment--an environment responsible both for the evolution of the species and for the repertoire acquired by each member. The actual role the environment plays in behavior has been difficult to detect: it not only "prods" and lashes," but primarily it "selects" behaviors through positive and negative reinforcement.

As the science of behavior progresses we can begin to reinterpret the freedom from aversive stimuli. There may be "feelings of freedom" but since feelings play no causal role in behavior, these can be ignored in a science of behavior.

The literature on freedom favors a reduction in aversive features of daily life, as by making life less arduous, dangerous, and painful. Contributions toward this goal have been possible by advances in physical and biological technology which have improved homes, transportation, food production, and medical care. A more dramatic movement toward increased freedom could be facilitated by the application of a behavioral technology. This would seek to control human behavior through positive reinforcement and eliminate the application of the negative reinforcement techniques now widely applied (e.g., threats of imprisonment, fines, etc.).

The major resistance to this scientific progress in the behavioral realm is offered by the adherents to the traditional philosophy who consider behaviorism to be an attempt to undermine the so-called freedom and human dignity it allows. As long as individuals appear to be acting freely--e.g., independent of external causes, they can be given credit for their accomplishments; this credit is the source of human dignity. The traditionalists see the behaviorists as trying to replace "self-controlled" (uncontrolled, miraculous) behavior with environmentally controlled behavior--thereby eliminating free will and consequently opportunities for acquiring human dignity.

In fact, the alternatives are not controlled vs. uncontrolled behavior, but planned vs. haphazard external control of behavior. The behaviorist cannot take away "freedom" or "dignity" for these exist only in the mythology of autonmous man. The behaviorist merely tries to improve man's lot by providing an objective understanding of what man really is.

In short, what we are finding, and will continue to find, is that behavior is under the control of the environment. The science of behavior will abolish the view of autonomous man and, time permitting, will provide a technology to solve the world's problems through a judiciously engineered human society.

Piaget's Reply

C'est avec un plaisir grand que je repond a la requete que je donne une critique de le livre notable de Professeur Skinner, Beyond Freedom and Dignity.

My response consists in an elaboration of the following points which expose the major weaknesses in Skinner's argument that man is unfree[3]. Skinner violates the scientific spirit by claiming that his views will be confirmed inevitably and supports this claim by distorting history in a way that creates an illusion of movement toward his position. Perhaps because he confuses the popular and scientific functions of explanation, Skinner (with awkward results in his own explanatory system) rejects all inner state explanations as unscientific. He does not recognize that all natural sciences employ such explanations. Of particular concern are theories utilizing the concept of self-regulation which pervade modern biology and appear to allow an interpretation of free-will within an acknowledged scientific framework.

Skinner first misleads us by setting up a correspondence between science and the view that man is unfree, and between prescience and the view that man is free. The implication is that as science progresses there will be an inevitable movement away from what Skinner calls the "traditional philosophy" toward the view that man is unfree. Historically, the view that man is unfree predated science and is probably as old as the "traditional" view. In fact many religions, past and present, reject the notion that man is free; thus it is erroneous to conclude that there is movement in one direction or the other. As shall be shown, it is by no means agreed that the "scientific" view of man requires that he be unfree; my theory for example, gives some support to the view that man is free.

His loyalty to "science" notwithstanding, Skinner violates the spirit of scientific inquiry which dictates that one remain open to disconfirmation as well as to confirmation. Skinner neglects this when he claims that science inevitable will show that man if unfree[4]. If a claim can only be "confirmed" then it cannot be considered a scientific claim.

By rejecting inner state explanations as unscientific, Skinner defines science so restrictively that even his prototypes--physics and biology, do not qualify. Contrary to what Skinner would have us believe, physics and biology did not advance by excluding all inner state explanations; they advanced by replacing less useful inner state explanations (e.g., concepts such as "jubilance of a fally body" in physics; "entelechy" in biology) with more useful inner state explanations (e.g., utilizing concepts such as atomic structure, quantum states, in physics; and genes, self-regulation, in biology).

Skinner claims inner state explanations put an end to inquiry even though they are incomplete. There is nothing about an inner state explanation which prevents further probing. Of course a subject may not be able to provide a complete scientific analysis of his own behavior, and he may not consider such an effort worthwhile. On the other hand, behavioristic explanations cannot claim completeness--one can always ask "why was that stimulus present?", "what about it was reinforcing?", and the recursion is infinite. Behaviorist explanations are not superior to others with respect to their completeness.

In everyday life, an explanation should be judged by its appropriateness to the audience. Certainly, some audiences require lengthy scientific responses. However, Skinner goes so far as to consider a history of reinforcement report to be a better answer to "why did you go to the movies?" than "because I felt like going." "Because I felt like going" seems to say very little, but the information value of a statement is judged as much by what is not said: "because I heard it was a great movie," "because my boyfriend invited me," "because they have the best popcorn in town."; the inquirer can assume that these were not the most significant factors in the

respondent's decision to go to the movies. I doubt if the inquires, even if he lingered while Skinner provided his history of reinforcement explanation, would be more satisfied than if he got the simpler information.

Again considering Skinner's avowed adherence to scientific principles, his explanations are peculiarly suspect in that they involve historical causality. This means that factors no longer present[5] are treated as causes in present phenomena--thus Skinner provides one of the few theories in all science in which what does not exist can affect what does exist. Furthermore, when Skinner says a person acts in a certain way in a given situation <u>because</u> of his history of reinforcement, it does not follow that such a behavior could be predicted from that history or that another person with the same history would not have acted differently. Thus while Skinner nominally uncovers causal laws, this causality is quite distinct from that employed in the natural sciences he tries to emulate.

Skinner cannot accept "self-regulation" as an explanatory concept, even though it is widely employed throughout biology, which Skinner admits as a legitimate science. While I wish to guard against the type of metaphorical abuse Skinner indulges in when he takes experimental terms and applies them to larger issues, the concept of "self-regulating organism" suggests to me, and I expect to the reader as well, that here is the door through which free will can enter.

This is not to claim that all self-regulating organisms have free will. Human adult knowledge is the most advanced biological organ regulating exchanges between organism and environment; to say that all animals sufficiently high up the phylogenetic scale have organs regulating such exchanges

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is not necessarily to say all of them are intelligent. Intelligence evolved from such organs, it is not equivalent to them. Analogously, free will, which can be defined as the subjective awareness of one's self-regulatory powers[6], can be thought of as evolving from more primitive regulatory systems; not all animals, nor even all humans need have free will: this leaves open the possibility that some do.

In challenging man's "dignity", Skinner asserts that all responsibility and credit for a person's behaviors should be given to his environment (it would be interesting to find out what his environment does with this gift). This is a healthy antidote for the self-righteous condemnation people give out in response to even petty crimes; it has bad side effects if taken in large doses. For example, even Skinner recognizes that credit, regardless of its objective merit, is a pervasive reinforcer; if everyone were a behaviorist, credit could not be given or accepted seriously, and therefore would lose its effectiveness as a motivator. Since a person's behavior is a product of his present environment and his self-regulatory aspects, responsibility and credit can be attributed to both the organism and its environment.

As to Skinner's denial that a person is a center of creation, I could not disagree more. It may be that the environment should get some of the credit for creations; but there is no question that the person is at the center of that creation.

In conclusion, both Skinner's science, which incorporates historical causality, and his philosophy, which rejects inner state explanations, show severe weaknesses, primarily due to his misunderstanding of the nature of scientific explanation. Skinner's image of man as unfree is challenged by

many psychologists and will need a new basis of support if it is to be upheld. Inner state explanations are scientifically acceptable[7]. In particular, widely acknowledged biological and psychological theories employ the concept of "self-regulating structures" considered to be a function of the organism-environment interaction, and these theories are compatible with, even if they may not necessitate, the view of man as free[8]. One can thus see Skinner's view of man toppling along with the misconceived philosophy of science upon which it rests.

Skinner's Rebuttal

Piaget's criticisms of my book are founded upon misconceptions about my position and upon a vitalistic and non-physicalistic approach to child development, which is no longer considered acceptable in natural science.

He claims that I am violating the spirit of scientific inquiry. It is not a violation to make an assertion that is supported by a wealth of data. My co-workers and I have amassed in our Cumulative Record a wealth of behavioral laws; its contents have been continually increasing, and it is virtually inconceivable that it should suddenly stop growing. It is most reasonable to assume that our program will show to an ever increasing extent that man's behavior is controlled by his environment.

Piaget claims that I resort to "historical causality" in my explanation. His objections are unclear. Certainly a past event can affect present behavior if it has altered an organism's probability of responding, in some way.

When I refer to biology as an example of a progressing science, I am referring to the advances in microbiology where investigators are cracking the genetic code. Of course there are more backward areas of biology which are still tainted with mystical explanatory concepts, and a prime example, taken from embryology, is the vitalistic term "self-regulation" which Piaget also employs.

Piaget seems to think I reject internal state explanations per se. I repeat that I believe that they tend to discourage further inquiry. Even where such explanations might prove useful, it still would prove beneficial to rephrase such statements in terms of observable physical characteristics and behaviors. If this translation cannot be carried out, then there is no way to test predictions and the hypothetical constructs have no scientific value. Thus I do not reject inner state constructs out of hand; I do believe that the data they are meant to handle can be better dealt with when phrased in terms of relations between observable events.

Not only does Piaget incorporate inner state explanations in his theory, he further transgresses the bounds of science by making his whole subject matter unobservable. Sixty years after Watson put us on solid ground by making behavior, instead of "mind", the subject matter of psychology, Piaget studies an apparently equally mystical existence called "cognitive structure." All attempts, and there have been many, to translate structures into behavioral terms have failed--Piaget acknowledges this. It must be concluded that the study of cognitive structures is not properly the domain of science.

Piaget's theory is one of many attempts to attribute scientific status to a system more appropriately considered as a mythology. His prominence is maintained by those who are so unwilling to give up their so called "freedom and dignity" that they are willing to distort the meaning of "science" in order to obtain support for their views. It is clear that if behavioral science is to progress and eventually solve the world's problems, theories like Piaget's will have to be accepted for what they are: historically interesting literature, but not science.

Piaget's Concluding Comments

In the arguments which follow, four major points are made. The first is that Skinner's conclusion that man is not free is based in part upon a fallacious extrapolation of his data. Next I show that Skinner's difficulty in comprehending the meaning of "historical causality" is tied to his dogmatic attempt to maintain a strict environmentalism while trying to appear scientific. In order to become consistently scientific, Skinner would have to give up his rejection of "self-regulation", -- and this rejection is crucial to his overall statement. Thirdly, it is seen that at the crux of Skinner's position is a definition of observability which appears to deny that science is an expanding enterprise. The final argument accepts the possibility that a Walden Two world is achievable, but asserts that such a society would fall far short of other alternatives in terms of leading humankind to realize its potential.

I agree that the Cumulative Record may well never stop expanding; it does not follow that this means that all behavior will be shown to be under environmental control--only that all the behavior Skinner and his collaborators have chosen to record are under such control. One can select points from a number line forever without ever having to choose outside the (0,1) segment; the vast multitude of other areas of the line need never be touched. By analogy, it is possible to sample an infinite number of behaviors without even touching upon most of the significant ones. If a Cumulative Record II were started which listed all behaviors not under environmental control, it is conceivable that both volumes would increase ad infinitum. If this is possible, then it cannot be that the endless expansion of Cumulative Record (I) implies that man is completely under control of his environment.

It is easy to see why Skinner fails to understand the charge that he employs an idiosyncratic form of "causality." If the problem were clear to him he would have to give up either his allegiance to natural science or his strict environmentalism; his confusion allows him to have his science and edict too. There are two ways to consider the relationship of past events to the present: 1) for there to be a mystical connection between the past and present (such as historical causality implies); or 2) for the past event to have helped create something which is conserved over time and which in turn affects the present (as in physical causality). If Skinner is invoking historical causality, then he should assume no more scientific status than he attributes to the vitalists, among which he wrongly includes me. If Skinner is employing physical causality, it is very hard to determine what he considers to be the mediating factors; Skinner occasionally uses "probability of response" as a characteristic of the organism which would qualify it as a mediating factor--but his intention in this direction is not clear.

If one assumes that in his deference to natural sciences, Skinner is trying to employ physical causality, then as dictated in classical physics, these mediating factors (wherever they are in Skinner's theory) must be considered the true causal factors in place of the indirect historical factors. While one may inquire as to how these mediating characteristics came to be created in the organism, and inquire as to the mechanism by which these are conserved through time, the relevant question regarding behavior is how these mediating characteristics interact with present environmental conditions to cause present behavior. The important point is that these mediating characteristics are of the organism and are factors in present behavior--thus one can say that the organism is in part self-determining.

Even within Skinner's framework, once historical causality is rejected, something much like "self-regulation" finds a place.

Skinner's objectivist and physicalist presuppositions shine clearly as he tries to banish "structure" from the domain of science. Any survey of present directions shows that "structure" is becoming an increasingly important scientific term: this trend affects a broad spectrum of disciplines: there are linguistic structures, social structures, atomic structures, mathematical structures, mythological structures, and so on.

Skinner's ostracism of "cognitive structure" is based upon the belief that it is unobservable, by thich he means not reducible to behavioral or physical terms. I accept the necessity of the observability requirement; I reject the implication that physical characteristics and behaviors exhaust the class of seeable events[9]. It is true that a cognitive structure cannot be assessed without looking at behavior, but this does not imply that the structure can be reduced to behaviors; the meaning of a written word cannot be reduced to the letters used to spell it--I can even missspell a word here and there and still get the meaning across.

This non-reducibility is not peculiar to structures (if one accepts the wholism involved in the constructivist philosophy). Early behaviorists justified the study of behaviors on the presupposition that these would eventually be reduced to neurological and chemical units. All attempts at such a physicalistic reduction have been abandoned--this is not surprising since the reduction is impossible[10]. (One can go further and question the priority of physicalness: the spatio-temporal organization of our universe is not the only one possible[11]). If behavior is admitted arbitrarily to the domain of science, then why not structure likewise?

One might say "I can see and label behaviors, but not structures." Let the reader test himself--can you recognize an operant behavior when it is presented in everyday life? What ones did you perform yesterday? If you and B. F. see the same movie (think of one you can recall easily), do you think you two would come up with the same list if asked to write down all behavioral events taking place? Need the correspondence be even relatively good? Even the identification of behaviors is a highly ambiguous process.

Furthermore, there are certain states most of us can determine with good (but not perfect) reliability--even though it does not appear possible to state fully the criteria in behavioral terms. Let us try another experiment: think of three different people whom you have judged at some point in time to be angry (or happy, or sad, etc.). Did they all manifest this in the same way? (I expect not.) Could you list all the criteria you use in determining when someone is or is not angry? (I think not.) Do you think that there are people you know that if they were present at the time of your judgments they would have been likely to concur? (Probably there are some such people.) If you were given sufficient evidence that one of your examples of an angry person was imitating a television scene, would this affect your judgment any? (Yes, that person may only have been pretending to be angry without really feeling angry.)

The above indicates that there exists a class of events with the following properties: 1) behaviors are used in judging their occurrence or non-occurrence; 2) they cannot be defined completely in terms of behaviors; 3) there can be inter-subjective agreement as to their occurrence or non-occurrence, i.e., they are public; 4) even in cases where the usual behavioral

indicators are present, other evidence can lead one to conclude that the event has not occurred (indicators can be present without the event being present, as in pretending); and 5) the event can be present without being detected[12].

Cognitive structures are in this class. The fact that they lend themselves to inter-subjective consensus is enough to qualify them for scientific study. The fact that they cannot be reduced to their behavioral manifestations is demonstrative of the basic reductionist fallacy. It is also not necessary that <u>everyone</u> be able to determine their presence in order for them to be meaningful scientific constructs.

It is wrong to infer from this that behaviors are no more observable than structures. There is a sense in which height is more seeable than liquid quantity: there are more humans (including preoperational children) that can determine that a transformation leaves height intact, than can determine that a transformation leaves quantity intact. Development allows us to deal more competently with the less superficial aspects of our environment. In fact, and contrary to what Skinner would have us believe, physics and biology have advanced by explaining the seeable in terms of the unseeable, or at least in terms (e.g., atomic structure) of that which very few can see.

Examination of cognitive development and the history of science leads one to view the growth of knowledge as a process which expands the domain of observable events[13]. Skinner assumes that the domain of observability is rigidly fixed; he cannot accept the fact that there are certain people at the cutting edge of their field who have come to see their subject matter in a new way. Skinner's blindness in this regard leads him to reject concepts such as "cognitive structure" on the grounds that they are

unobservable--by which he means there are people, including himself, who cannot detect the presence of these entities. But this policy not only excludes most of what is usually considered science, but relegates what is supposed to represent the epitome of human intellectual achievement to the lowest common denominator in man's understanding.

To end this discussion, I present a counter-claim in response to Skinner's charge that positions such as mine are impeding science and prolonging the world's problems. Koch (1964) makes the argument that it is behaviorism that is prohibiting psychology from taking a leading role among the sciences--just as other fields are beginning to look its way for guidance. Bertalannfy (1967), among others, supports the claim that Skinner's scientific approach to behavioral engineering has already been tried; it has not only failed to reap many of the benefits it promised, but is even the source of many of the world's troubles.

I do not think it is fruitful in a situation fraught with reciprocal interactions to discuss what causes what. Nevertheless, using the organization as a microcosm of society, one finds conceptual support for a correspondence between Skinner's view of man and the problems of society in its relationship to its members. To illustrate this I present the following conceptualization which is well known among those concerned with organizational development. (This material is taken from the Reading Book of the NTL Institute for Applied Behavioral Science, associated with the National Education Association. The papers were originally prepared for theory sessions at the Institute's laboratories.):

Douglas McGregor in The Human Side of Enterprise has developed two theories to explain human behavior. Essentially, Theory X builds on the lower order of human needs. Theory Y assumes that, once met, these no longer motivate. It builds on the higher order of needs.

Human behavior is based on theory--we do A because we theorize it will produce B. It is important that the leader examine his assumptions--his theory--about what makes people behave as they do. His assumptions reflect his value system and determine his practices and how he organizes for decision making and action.

It may be useful to check our own assumptions against the following sets of assumptions.

Theory X -

1. The average human being has an inherent dislike of work and will avoid it if he can.
2. Because of the human characteristic of dislike of work, most people must be coerced, controlled, directed, threatened with punishment to get them to put forth adequate effort toward the achievement of organizational objectives.
3. The average human being prefers to be directed, wishes to avoid responsibility, has relatively little ambition, wants security above all.

Theory Y -

1. The expenditure of physical and mental effort in work is as natural as play or rest.
2. External control and the threat of punishment are not the only means for bringing about effort toward organizational objectives. Man will exercise self-direction and self-control in the service of objectives to which he is committed.
3. Commitment to objectives is related to the rewards associated with their achievement.
4. The average human being learns, under proper conditions, not only to accept but to seek responsibility.
5. The capacity to exercise a relatively high degree of imagination, ingenuity, and creativity in the solution of organizational objectives is widely, not narrowly, distributed in the population.
6. Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partically utilized.

The need is not so much to choose up sides as to which theory is "right" but to make our assumptions about human behavior more explicit and to check how well our own behavior reflects our assumptions. Theory Y is more dynamic than X, more optimistic about the possibility for human growth and development, more concerned with self-direction and self-responsibility, more consistent with available social science knowledge.

Theory X or Theory Y would influence how we organize for decision making and action. If we accept Theory X, then it would make sense to have--

One way communication
Strategy planning by the top leaders only
Decision making at the top level only

A handing down of decisions to be implemented by middle management
A handing down of instructions to be carried out by the workers
(Nothing goes up except reports)

Theory Y would make it worthwhile to have--

Two-way communication
Involvement in goal setting, planning, and decision making at each level.
(NTL, 1969)

Now the correspondence I wish to set up is not perfect in that Skinner advises against using punishment as a controlling technique. Nevertheless, it is easy to see how Theory X could be suggested by the behaviorist view of man as inherently passive and under the control of the environment. Theory Y has a close affinity with the Piagetian assumptions that man is intrinsically active and self-regulating, that he is capable of free choice and creativity.

There is evidence to indicate that both theories tend to function as self-fulfilling prophecies. A management operating under Theory X almost always finds its employees conforming to their theoretical assumptions. Many employees avoid work and responsibility: they do what they do in order to earn money, security, and approval. (Occasionally a "lunatic" throws a wrench into the works: this is sluffed off as an example of the perversity of human beings. This "perversity" is not accounted for in the theory even though it plays an important part in the writings of both Skinner and Watson who blame this unexplained perversity for preventing the realization of their glorious vision.

A Theory Y management also tends to find that its staff confirms its theory. This is not as often true as in the X case; a mismatch usually reverts to an X situation. In this sense Y is less stable than X. Y also requires a much larger expenditure of energy to maintain an organization

operating on the Theory Y level. This raises the question of the efficiency of such an organization.

The proper measure of organizational efficiency is the "worth of the output divided by the cost to the organization of producing that output." If one equates "energy input" with "cost" then "worth of output divided by energy input" would be the measure of efficiency and X organizations would have an apparent superiority. This is because the decision making procedures of X organizations tend to be simpler and quicker, and do not involve most of the employees who can thus devote full time to production.

There are important disadvantages to the X model. The first is that frequently the people who have best access to information relevant to company policy are not involved in the decision making procedure--less than fully effective decisions are usually made. The more complex decision-making procedures involving people at all levels of the Y organization permit a greater availability of relevant information to influence the final decision--thus the result is a potentially better plan for action.

The most significant advantage of the Y organization is that it embodies a synergistic[14] integration of individual needs with organizational goals. Since people at all levels are involved in decision making, the feeling of having a measure of control over one's immediate environment is infused into the individuals; this feeling facilitates a productive orientation. Since a person is involved in the decisions made concerning his particular contribution to the organization, it is more possible that a way can be found to utilize his competencies to the fullest--this not only is beneficial to the whole organization, but is rewarding to the individual. Each member of the Y organization is involved in goal setting, planning, and decision making;

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thus he is both rewarded and motivated by the understanding that he is contributing meaningfully to something larger than himself. These are all motivations that the X organization is unable to tap.

In a Theory X organization the individual's contribution requires compensation--the more the individual does, the more it costs the organization. The synergistic character of the Y organization takes advantage of rewards which can be provided at no cost to the organization. Through improved decision making and increased employee commitment, the Y organization can more than offset the cost involved in setting up and maintaining the required complex communication network. Thus in terms of the proper measure of organizational efficiency (equals worth of output divided by production cost) the Y organization is potentially superior.

This increased efficiency means greater profits and a competitive edge for the organization. Important in its own right (i.e., even beyond its value to the organization as a unity) is the fact that the members of the Y organization find their work more rewarding and in general are more satisfied than X employees. Apparently, the Y's have it.

This analysis suggests that a Walden II world would run smoothly with only occasional monkey wrenches thrown in. It would have difficulty comparing to or competing with a Theory Y society which would be more dynamic and at the same time more contented.

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Author's Conclusion

Neither Skinner's philosophy of science, nor his theory of man is tenable, although each offers interesting insights from a limited perspective. His plans for a scientifically controlled society are not promising.

Piaget provides an understanding of science as a growing organization and reorganization of knowledge which occasionally induces qualitative shifts in people's domain of perception--allowing an ever deepening penetration or reality. His image of man is of a developing, integrating, and acting organism in dynamic exchange with its environment. This image allows--and perhaps suggests, a more likely and more exciting direction for our world.

References

Hanson, N. R. Patterns of Discovery. Cambridge: Cambridge University Press, 1958.

Koch, S. Psychology and emerging conceptions of knowledge as unitary. In T. W. Wann (Ed.), Behaviorism and Phenomenology. Chicago: University of Chicago Press, 1964.

Kuhn, T. S. The Structure of Scientific Revolutions. (2nd ed.) Chicago: University of Chicago Press, 1970.

Piaget, J. The Psychology of the Child. New York: Basic Books, 1969.

Piaget, J. Biology and Knowledge. Chicago: University of Chicago Press, 1971.

Rogers, C. R. Freedom to Learn. Columbus, Ohio: Charles E. Merrill Publishing Company, 1969.

Skinner, B. F. Beyond Freedom and Dignity. New York: Knoph, 1971.

von Bertalannfy, L. Robots, Men and Minds. New York: Brazille., 1967.

Footnotes

0. All notes are to be taken as Anderson's (as opposed to "Piaget's" or "Skinner's").

1. This paper is a manufactured dialogue between two of the most influential psychologists, Jean Piaget and B. F. Skinner. While actual quotes are incorporated into the text, the overall organization of the statements as well as most of the wording is the present author's (Anderson's). I accept responsibility for the accuracy of representation of each protagonist's position.

The motive behind the dialogue is to critique Skinner's Beyond Freedom and Dignity (1971). Since the end result is not favorable to Skinner, I stay quite close to his actual statements in the interest of fairness. Some liberty is taken in "Skinner's" rebuttal to Piaget because the protagonists have not actually confronted each other; nonetheless Skinner's position is argued as well as it can be.

I have taken considerably more liberty with Piaget who is really used as a representative of myself. I choose him as a protagonist because all of the basic criticisms of Skinner that I use can be derived from or are suggested by Piaget's writings. Still, "Piaget's" position uses ideas I have borrowed from other authors to be mentioned elsewhere. Thus while "Piaget's" position is held to be compatible with Piaget's, the actual text is my own integration of several authors' contributions. The reader should recognize a movement from a very close rendition of each protagonist's ideas toward a more interpretive approach culminating in my own synthesis of organizational psychology with the Piagetian framework.

2. The reader will note that "free" (like "dignity") and its derivatives are never defined despite their centrality in the debate. The main reason for this is that we are dealing with two incommensurable language systems. Piaget and Skinner cannot be using "free" (or any other central term) in the same way. This is the same problem Skinner faces in Beyond Freedom and Dignity since "freedom" is a term generic to the traditional philosophy he opposes; he attempts to redefine the term in the language of behaviorism--he writes ambiguously as there are two definitions for the single term.

If Skinner faces difficulty with definitions in his book, which was merely a one position statement, my problem is compounded in that two positions must be represented. Rather than dealing with the multiplicatives of the meanings of "free", I present only brief indications of the traditional, Skinnerian and Piagetian uses of the term.

In this paper I try to show the weaknesses in Skinner's argument against free will; I do nothing more than suggest how Piaget might deal with the concept of "freedom." A logical sequel to this paper would be a Piagetian alternative interpretation of the concept of "free" and terms related to it. This might involve the distinction between various meanings of "free" and an integration of these meanings into the Piagetian framework.

3. "Unfree" like its antonym remains loosely defined. The characterization of Skinner's position as "man being unfree" is Carl Rogers' (1969, pp. 260-265).

4. Of course all theories (including Piaget's) are "biases". This is just another way of saying that they generate predictions. Skinner's

violation is not one of bias. What he does is define science in such a way that the possibility of free will is excluded and then claim that the non-existence of free will is "proved" empirically by science. The two prongs of this attack should nullify each other. If man is unfree by "scientific" definition, then his freedom is not an empirical issue: it makes no sense to claim that further scientific research will support the deterministic claim. If the issue is empirical, then it must be possible that future investigations will show that man is free. Skinner's violation then amounts amounts to the claiming of empirical support for a statement which is true by (his) definition of science.

5. "No longer present" simply means that what is past is gone. Skinner's "causality" shares with the causality of natural science the condition that the cause be antecedent to the effect; Skinner neglects the second characteristic of a cause: the cause and the effect must be contiguous.

Skinner, in the coming rebuttal objects to this interpretation of his theory, arguing that the past influences the "probability of response." In this case Skinner is introducing a factor mediating between the past and present. It is true that this belies Piaget's criticism. However, such mediating factors are conceptually equivalent to inner states. Thus Skinner can only avoid deviating from traditional scientific causality by admitting inner state explanations--and then his case against positions which might admit free will is without foundation.

A related objection can be made with regard to neo-behavioristic theories which expand upon classical behaviorism by adding the concept of "self-reinforcement" or "internal mechanisms of reinforcement." The addition of these concepts avoids some of the most apparent weaknesses of Skinner's theory--such as its inability to explain "curiosity." On the other hand those concepts

are inner state terms, lacking the observability requirement that characterizes classical behaviorism. By incorporating them behaviorism loses the distinguishability that is claimed for itself; the major distinctive feature of modern behaviorism is its incoherence which results from the contradictions between the foundations and the present formulations of behaviorism.

6. This may not sound like what most people call "free will," but like Skinner, I believe that the traditional way of breaking up the concepts revolving around the term "free" is inadequate. I believe the Piagetian framework can be used to reorganize this field in a way that, once understood, would not only satisfy most peoples' conceptions of "free-will", but would be seen as an improvement by most. This is the task for the future; the definition of "free-will" suggested is intended as a preview of the projected alternative position.

7. As is pointed out later, inner state explanations are not only acceptable in science; they are characteristic of science. Science explains the observable in terms of the less observable--this is the sense in which science penetrates reality.

8. This is a reference to my objection to Skinner's prejudicing the issue of free will. Experience has indicated that explanatory systems not utilizing self-regulation, or an analogous concept, in the biological and psychological realms are inadequate. However "free-will" is not to be equated with self-regulation except as a special case. Self-regulation can be very automatic, even deterministic--no awareness of this regulation need exist. So while the postulation of self-regulation does contradict Skinner's basic tenets, it leaves open the question of the existence and nature of free-will.

9. This point is argued by many authors. Kuhn (1969) is one notable source. Hanson (1958) is relevant, especially the chapter called "Observation."

10. This statement of impossibility is a little unfair, since it is based upon arguments not presented in this paper and is furthermore not empirically verifiable--as an independent hypothesis. This statement is logically derivable from the postulates of constructivism. Therefore the empirical status of this statement is bound to the validity of construction as a whole.

11. This is not to say I have a better way of organizing reality. The value of the spatial-temporal breakdown of the universe has been proved over time. I am saying that this success should not be taken to mean that the spatial-temporal breakdown has a qualitative primacy over all others. Actually this breakdown had to be modified in this century to maintain it validity. The important point to be made is that if an alternative breakdown is presented, it does not have to be shown that it is reducible to spatial-temporal physicalistic terms; it need only stand on its own explanatory value. This may result in science accepting two or more basically untranslatable explanatory systems--awaiting possible integration. This may seem undesirable to reductionists, but the constructivist may see that this diversity already exists.

12. This does not mean an event can be present and unobservable. There remain definitional problems with this last term. Note 13 deals with this.

13. Let us consider the microscope as an example and as a metaphor for understanding the assertion that the domain of observability is expanding. The persons who first looked through microscopes saw things that were previously not observable. This is an example in concrete terms of how the construction of a new tool can expand the domain of observability.

A theory is a tool that enables us to see things in a certain way. A new theory provides an alternative way of looking at the subject matter at hand. A new theory will displace its predecessor if it enables its adherents to deal more effectively with their subject matter, and if its proponents are successful in attracting attention to and getting people to understand the theory.

There is more to acquiring a microscope as a tool than the mere purchasing of the equipment, just as there is more to acquiring a new theory than buying and even reading a book. Once the acquisition is made, however, a new world is open to observation.

14. Synergy = syn (together) + energy. (The term was coined by Ruth Benedict). The energies available to a system can work together or in opposition. Synergy refers to energies working in the same direction. Synergistic is the quality of having commonly directed energies.

In an X organization, the workers want more pay and this directly conflicts with the managements concern for higher profits. The competitive nature of this situation is a characteristic of low synergy.

When tasks are intrinsically rewarding, a cooperative venture is set up. The more of this kind of reward management is able to give--the more production it receives. By aligning the goals of the individual with the goals of management, the Y model creates a more synergistic organization.

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